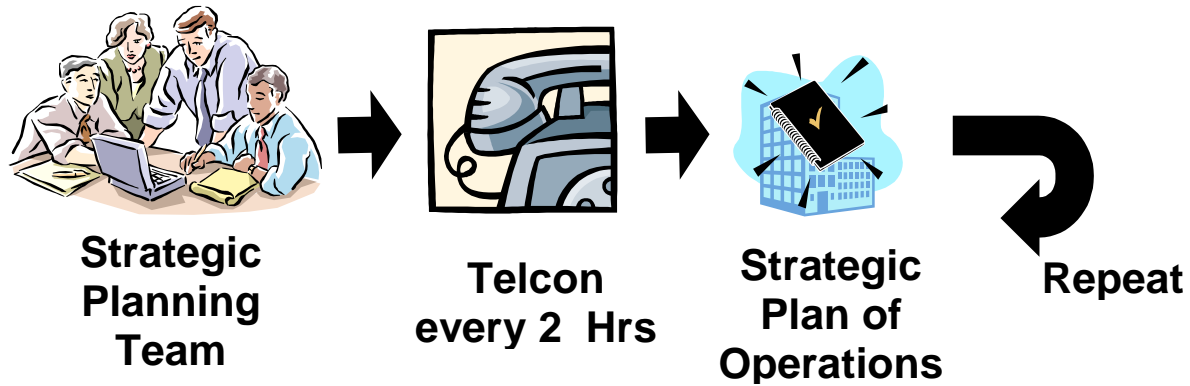## ER-2: Collaborate to Manage Congestion

Processes, procedures, and techniques to collaboratively mitigate en route congestion.

Strategic Planning Team → **Telcon every 2 Hrs** → **Strategic Plan of Operations** → **Repeat**

Background

Certain areas of the National Airspace System, such as the Chicago to northeastern U.S corridor and others east of the Mississippi River, are highly complex and geographically limited. Overall increases in airspace demand, and significant increases during peak demand periods routinely lead to congestion, which can have a ripple effect throughout the NAS, even under the best weather conditions. When areas of high demand are impacted by convective weather the volume and complexity issues are extended dramatically requiring a system wide choreographed effort to minimize service disruption. The Strategic Planning Team (SPT) process, launched by the Spring/Summer 2000 initiative, was designed to foster the effort.

The ATCSCC SPT conducts a telcon among the major FAA facilities and the user community every two hours to discuss the status of the system, constraint projections, and to develop the Strategic Plan of Operations (SPO). The SPO is a collaborative agreement on how to deal with severe weather and other flow constraints and to provide a degree of predictability for all stakeholders by providing a common view of system issues with a look ahead of two to four hours. The spring of 2000 was the inaugural year for the SPT/SPO process. Significant progress was made during the severe weather season of 2000, however, issues remain and improvements can be made. For example, how to improve the strategic plans, balance objectives among the stakeholders, integrate the strategic planning activity with tactical implementation, incorporating feedback, communicating the plan, and improving technology.

Ops Change Description

Operational changes will be seen as a continuous improvement to the strategic planning process and system predictability. There will be a greater understanding and collaboration in the identification of the flow constraints utilizing tools such as the Flow Constraint Area (FCA) and Common Constraint Situation Display (CCSD) tools. Enhancements and greater distribution of Flight Schedule Monitor (FSM), providing airport traffic demand and capacity maximization capabilities, when Ground Delay Programs (GDP) are used to support severe weather avoidance plans (SWAP), will continue. Communication improvements utilizing the National Log program and the ATCSCC web site are on

going. These and other tools will facilitate strategies applied for a system approach solution by all stakeholders (users and FAA facilities). Operational changes, centered on the SPT process, will incorporate these and other technological improvements in communication collaboration, and predictability. Emphasis will also be targeted towards training on current and future decision support tools. The improvements are evolutionary and thus will span the entire timeframe of near, middle, and long term (2001-2010) and most likely beyond as well. The following sections address the operational changes described:

- ER-2.1: Improved collaboration and communication through shared information.

- ER-2.2: Menu of enhanced pre-planned options.

- ER-2.3: Improved predictability of congestion.

- ER-2.4: Training.

Benefit, Performance and Metrics

- Increase on-time arrival rate.

- Increase on-time departure rate.

- Decrease excess taxi times (> 1 hour).

- Reduce the number and/or duration of ground delay programs due to volume congestion.

- Reduce the number and/or duration of ground stops due to volume congestion.

- Decrease the variance in scheduled throughput against actual.

- Decrease estimated time en route.

- Decrease minutes of en route delay.

- Increase flown as filed.

- Increased predictability of the NAS.

ER-2.1 Improved Collaboration and Communication through Shared Information on FAA/NAS Users Plans and Constraints

Scope and Applicability

Near-Term:
- The information provided on the ATCSCC web site (an internet based information dissemination system which provides users quick and accurate NAS information) will be enhanced to provide greater clarity on scope and timing of plans.

- Initial presentation of common information on NAS status and constraints will be provided to the ATCSCC, and facilities, on the Traffic Situation Display, via the Enhanced Traffic Management Systems (ETMS) (a flight data processing and distribution system which utilizes

historical then actual aircraft position and flight intent information), Flow Constraint Area tool (FCA), and to the users via ETMS Common Constraint Situation display (CCSD).

- The FAA's national log program (an intra FAA Air Traffic Services computer based communications and reporting system for controllers and traffic management personnel to record and distribute daily operational information) will provide a more efficient method of capturing and disseminating information on restrictions (e.g., airport runway configuration changes can be entered and effected facilities addressed for notification).

- Users systems such as the Collaborative Decision Making Network (CDMNet) (a collective network routed through the Volpe Center providing two-way real-time operational data exchange such as cancellation information and NAS status) is continuing to be expanded for better data quality and increased user participation to enhance system demand predictability.

- Spring/Summer 2001 (S2K+1) process improvements are under way including:
  - Collaborative S2K+1 field training.
  - 24 hour SPT/severe weather unit staffing.
  - Pre SPT checklist usage.
  - Increased staffing levels at FAA field facilities.
  - Improved Pre/Post communication of the SPO.
  - Develop collaborative "rules of the road" procedures.

Mid-Term:
- Information on user intent (e.g., a four hour prior to departure early filing of intent process) would provide enhanced accuracy of predictions.

- NAS status and constraints descriptions will be enhanced through updated versions of FCA and CCSD tools with additional Collaborative Routing Coordination Tool (CRCT) (a prototype tool which utilizes aircraft trajectory modeling along with flight schedule information to produce solutions to airspace capacity and en route weather constraint problems) functionality's, to provide information on the potential impact of plans on the NAS.

Long-Term:
- Continuous improvement of data provided by the FAA and NAS users for enhanced collaboration.

Key Decisions

- Access to data and information that is currently considered to be sensitive or company proprietary is at issue. There are security, company proprietary, and privacy restrictions on some of the information that has been requested for inclusion in the information exchange.

- Data quality standards adopted (e.g., timely cancellation notification that will allow maximum utilization of available airport capacity).

- Data sharing parameters adopted (e.g., inclusion of GA flight intent as early as possible).

- Common metrics identified for operational analysis and problem identification.

- Common goals and targets adopted to achieve a "System Thinking" approach.

- Operating "rules of the road" adapted to foster equitability for user groups.

- Expanded authority of the FAA to enforce compliance when "gaming" of the system is identified.

Key Risks

- The numbers of stakeholders (airspace users and FAA facilities) that need to be involved in the collaborative process are very large. The sheer volume and diversity of stakeholders makes communication and technology compatibility, to achieve a common system understanding, very difficult.

- User equitability may not be ensured in the interim, during transitions to full collaborative participation, due to incomplete intent data, the need for an agreed upon reduced en route capacity rationing process.

- Data sharing enhancements.

- Systems connectivity between stakeholders may not be fully established due to the diversity of stakeholder systems or operational environments (e.g., a major air carriers AOC fully connected to decision support tools through the CDMNet versus a single business jet operator whose preflight information comes from an Fixed Base Operator (FBO) or Duats).

ER-2.2 Improved Collaboration and Communication: Publish a Menu of Enhanced Preplanned Options for Congestion Management

Scope and Applicability

- Near-, Mid-, and Long-Term - Coordination of route modifications in a timely manner was a high priority item going into the spring of 2000. The goal of reducing the time needed to express clearance changes over already congested voice frequencies necessitated abbreviating the clearances in a standardized and database adaptable format. The National Playbook, Coded Departure Routes (CDR), and Low Altitude Arrival and Departure Routes (LAADR) routes are means of achieving this goal. The Playbook and CDRs have been used successfully during congestion situations during the year 2000 and LAADR, while only used at St. Louis under a MOU between ZKC and TWA, has shown to be an effective program. Enhancement to these programs, such as, program expansion, and improved distribution is a continual process. Playbook and Coded Departure routes are available on the ATCSCC web site and the CDM web site.

  - Identify cycle and process for updating published "plays".

  - Post updates on the ATCSCC web site.

Key Decisions

- Increase incorporation of pre-planned routes into flight planning systems and Aircraft flight management systems (FMS).

Key Risks

- Dynamics of tactical real-time situations often require of revision pre-planned options.

- Improved coordination and communication when activating pre-planned options or changes to pre-planned options may require automation improvements to FAA/User systems.

ER-2.3 Technology: Improved Predictability of Congestion and Resolution Assessment

Scope and Applicability

- The enhancements of existing decision support systems and the addition of new decision support systems (DSS) and/or tools will improve the timeliness, accuracy, and quality of congestion predictions and resolutions. In the near, mid, and long term, continuous improvement programs to increase predictability of congestion and provide quality resolution assessment are:

  - Enhancements to the Collaborative Convective Forecast Product (CCFP) which will provide a more accurate view of long term convective weather constraints.

  - Enhanced Traffic Management System upgrades (i.e., FCA functionality) which will better define airspace capacity reductions and support resolution capabilities.

  - Continued evaluation of the Collaborative Routing and Coordination Tool (CRCT) functionality to be transferred to the FCA tool.

  - Complete full adaptation of the Departure Spacing Program (DSP) to assist in maximum delivery of aircraft from the terminal area.

  - Improved Ground Delay Program (GDP) in support of SWAP for en-route congestion.

  - Revised process for using Flight Schedule Monitor (FSM) when implementing Ground Delay Program (GDP) in support of swap for en-route congestion.

Key Decisions

- Decision Support Systems (DSS) integration.

- Establish an Early Filing of Intent program.

Key Risks

- Quality of input data for strategic planning time horizons is highly variable. Improve data quality, access and usage will need to be revisited or established.

ER-2.4 Training: Expansion of Joint FAA/Airline Initial Training, Recurrent Training, and Analysis

Scope and Applicability

- Near-, Mid-, and Long-Term - All participants in strategic planning for traffic flow management (users and FAA) need to have common training on traffic flow management (TFM) techniques, procedures and processes. The following programs have begun prior to the Spring 2001 convective weather season and will be on going as part of a continuous improvement process.
    - System operations advocacy training.
    - S2K+1 field training (option B) for FAA and users at various geographic locations.
    - ATCSCC training (option A) for FAA and users at the ATCSCC.
    - National traffic management course #50113 for FAA and users at the ATCSCC.
    - ATCSCC personnel familiarization visits to field facilities.
    - ATT facility manager, TMU team training.
    - Leadership pair training.
    - MTO visitations.
    - Field traffic management visitations.
    - Video development for FAA and user recurrent training programs.
    - Develop revised training package for initial training.
    - Develop and disseminate revised training materials based on lessons learned for recurring training.
    - Post analysis to evaluate events, process, and procedures.
- In addition, post event analysis for feedback and recurrent training is needed to provide information on lessons learned, employing improved techniques and processes.

Key Decisions

- Providing resources and ensuring maximum participation for joint FAA/User training.
- Access to data, data standards, data sharing, and common metrics for analysis and feedback.

Key Risks

- Data quality.